

Work Order ID 88044

\*88044\*

Page 1

July-24-12 9:03:04 AM

Item ID: D206-667-107BL

Accept

\*N900040100\*

Setup Start

\*NS1\*

Revision ID:

Item Name: Crosstube Mid Fwd, Blue

Stop

\*NS2\*

Start Date: 7/24/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/07/24

QC: \_\_\_\_\_

Date: \_\_\_\_\_

SPC (Y/N):

Tooling: \_\_\_\_\_

Date: \_\_\_\_\_

Run Start

\*NR1\*

Stop

\*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D206-667-147	A (DEO)								
DSI9565	A								
HIN-D206-667	D								

100

\*100\*

DOCUMENT CONTROL

0.00

SJ

0.00

DAS

16

12/07/14

JF for MLJ 12-8-14

DC

Document Control

Memo

Photocopy bluefile and create labels as per PPP D206-667-107 & Eng 002

110

\*110\*

Pick Kit

0.00

Packaging

Memo

0.00

Packaging

Packaging

Rm 12-8-2

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____			DISPOSITION			AGAINST DEPARTMENT/PROCESS							
			Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/>	Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/>	Water Jet <input type="checkbox"/> Prod. Eng. Coor. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/>	Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/>						
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance :	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector				
Doc/Data <input type="checkbox"/> Equip/Tooling <input type="checkbox"/> Operator <input type="checkbox"/> Material <input type="checkbox"/> Setup <input type="checkbox"/> Other <input type="checkbox"/> Process <input type="checkbox"/> Supplier <input type="checkbox"/> Training <input type="checkbox"/> Unapproved <input type="checkbox"/>													
FAULT CATEGORY													
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube				<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions						<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge  <input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled  <input type="checkbox"/> Other			

Work Order ID 88044

\*88044\*

Page 2

July-24-12 9:03:04 AM

Item ID: D206-667-107BL

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Stop

\*NS2\*

Item Name: Crosstube Mid Fwd, Blue

Start Date: 7/24/12 Start Qty: 1.00 \*1\*

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00 \*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

120

\*120\*

CNC Bend 2

CNC Alpha 160 Bender

BENDING MACHINE - CROSSTUBES

0.00

M0

12/8/7

130

\*130\*

QC

Quality Control

QC15- Crosstube Dimensional Check

0.00



12/08/07

0.00

NCR: Yes /  No

## **WORK ORDER NON-CONFORMANCE / UPDATE**

DQA: *[Signature]* Date: 12/08/14

QA Closed: ASD Date: 12/08/2020

Work Order:	88044		DISPOSITION	AGAINST DEPARTMENT/PROCESS					
Part No.	D206-667-107BL		Rework <input checked="" type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input checked="" type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>		
NCR No.	12-1702		Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input checked="" type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>		
			Use-as-is <input checked="" type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>		
			Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>			
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data				tube has height bent					
Equip/Tooling	X			out of tol.	GJ	Accepted as per DAS. Email Aug 31, 2012 (see attach).	JW	MO 12/8/8	DAS 18 8-8
Operator									
Material	X	120607	120	R.C. Process	12/8/13	Trim "Size B" cuff 0.100" +0.006" -0.010" per Email.	12-8-8		12/8/13
Setup									
Other									
Process	X								
Supplier									
Training									
Unapproved									
FAULT CATEGORY									
Landing Gear				General					
<input checked="" type="checkbox"/> Bending				<input type="checkbox"/> Bend				<input type="checkbox"/> Ovalized	Pressure/Forced
<input type="checkbox"/> Centre Not Concentric to O/S				<input type="checkbox"/> BOM/Route				<input type="checkbox"/> Over/Under tolerance	Temperature/Cure
<input type="checkbox"/> Cracks				<input type="checkbox"/> Broken/Damaged				<input type="checkbox"/> Part Incorrect	Weld
<input type="checkbox"/> Crushed/Crimped.				<input type="checkbox"/> Burrs				<input type="checkbox"/> Part Lost/Missing	Wrong Stock Pulled
<input type="checkbox"/> Cuffs				<input type="checkbox"/> Contamination				<input type="checkbox"/> Part Moved	
<input type="checkbox"/> Heat Treat				<input type="checkbox"/> Countersink				<input type="checkbox"/> Positioned Wrong	
<input type="checkbox"/> Inspection Strip in Tube				<input type="checkbox"/> Cut Too Short				<input type="checkbox"/> Power Loss/Surge	
<input type="checkbox"/> Ripples in Bend				<input type="checkbox"/> Drill Holes				<input type="checkbox"/> Other	
<input type="checkbox"/> Torque Waves in Extrusion				<input type="checkbox"/> Drawing					
<input type="checkbox"/> Turning Sequence				<input type="checkbox"/> Finish					
<input type="checkbox"/> Wave/Twist in Tube				<input type="checkbox"/> Folio					
					Grain				
					Hardware				
					Inspection Incomplete				
					Instructions Incomplete/Unclear				
					Maintenance				
					Mislabeled				
					Misread				
					Offset				
					Out of Calibration				
					Out of Sequence				
					Outside Dimensions				

## Eric Downing

---

**From:** David Shepherd <dshepherd@dartaero.com>  
**Sent:** Tuesday, August 07, 2012 12:19 PM  
**To:** 'Eric Downing'; 'Alex Pharand'  
**Cc:** 'Mike Petsche'; psmith@dartaero.com  
**Subject:** RE: D206-667-107BL

Yes ... This tube is acceptable.

The saddle holes need to be drilled so that the tube will sit level on the aircraft.

It would be acceptable to remove 0.100" from the 18.650" side and shift the supports slightly.

David

---

**From:** Eric Downing [mailto:[edowning@dartaero.com](mailto:edowning@dartaero.com)]

**Sent:** August-07-12 9:26 AM

**To:** Alex Pharand; David Shepherd

**Cc:** 'Mike Petsche'; [psmith@dartaero.com](mailto:psmith@dartaero.com)

**Subject:** D206-667-107BL

Good morning David/Alex

I have a D206-667-107BL B#88044 with a height on one side measuring 18.650" should be MAX 18.600". Tube is slightly over bent on the height but within tolerance on the spans as you can see on the dimension sheet that's attached.

Is this acceptable ?

Thanks

Eric Downing  
QC Corrdinator  
Dart Aerospace LTD.



Work Order ID 88044

\*88044\*

Page 3

July-24-12 9:03:04 AM

Item ID: D206-667-107BL

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Mid Fwd, Blue

Stop

\*NS2\*

Start Date: 7/24/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
140		0.00							
*140*	Crosstubes	0.00							
Crosstubes	Memo	0.00							
	1-Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-147. Drill all (3) top holes.								
	3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.								
	4-Drill pilot holes using drill Jig DT8541 & DT8542 as per Dwg D206-667-147. Drill only the top (2) holes								
	5-Drill pilot holes as per Dwg D206-667-147. Drill only the top (2) holes.								
	6-Drill Fwd rivet holes using drill Jig DT8787 fwd as per Dwg D206-667-147. Note: Fwd side has 3x top holes.								
	7-Drill Aft rivet holes using drill Jig DT8787 fwd as per Dwg D206-667-147.								
	8-C'sink holes as per Dwg D206-667-147. Allow rivet to sit below surface to compensate for paint.								
	9 -Scribe part # and batch # using vibrating stylus as per Dwg D206-667-147 Inside of Cuff(Donot engrave on outside of tube)								
	10- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Debur & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-147								

Rm/Mo 12-8-9

JW

12-8-9

NCR: Yes / No

## WORK ORDER NON-CONFORMANCE / UPDATE

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS					
Part No. _____		Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>			
NCR No. _____		Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>			
		Use-as-is <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>			
		Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>				
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data									
Equip/Tooling									
Operator									
Material									
Setup									
Other									
Process									
Supplier									
Training									
Unapproved									
FAULT CATEGORY									
Landing Gear	General								
	<input type="checkbox"/> Bending	<input type="checkbox"/> Bend	<input type="checkbox"/> Grain	<input type="checkbox"/> Ovalized	<input type="checkbox"/> Pressure/Forced				
	<input type="checkbox"/> Centre Not Concentric to O/S	<input type="checkbox"/> BOM/Route	<input type="checkbox"/> Hardware	<input type="checkbox"/> Over/Under tolerance	<input type="checkbox"/> Temperature/Cure				
	<input type="checkbox"/> Cracks	<input type="checkbox"/> Broken/Damaged	<input type="checkbox"/> Inspection Incomplete	<input type="checkbox"/> Part Incorrect	<input type="checkbox"/> Weld				
	<input type="checkbox"/> Crushed/Crimped.	<input type="checkbox"/> Burrs	<input type="checkbox"/> Instructions Incomplete/Unclear	<input type="checkbox"/> Part Lost/Missing	<input type="checkbox"/> Wrong Stock Pulled				
	<input type="checkbox"/> Cuffs	<input type="checkbox"/> Contamination	<input type="checkbox"/> Maintenance	<input type="checkbox"/> Part Moved					
	<input type="checkbox"/> Heat Treat	<input type="checkbox"/> Countersink	<input type="checkbox"/> Mislabeled	<input type="checkbox"/> Positioned Wrong					
	<input type="checkbox"/> Inspection Strip in Tube	<input type="checkbox"/> Cut Too Short	<input type="checkbox"/> Misread	<input type="checkbox"/> Power Loss/Surge					
	<input type="checkbox"/> Ripples in Bend	<input type="checkbox"/> Drill Holes	<input type="checkbox"/> Offset						
	<input type="checkbox"/> Torque Waves in Extrusion	<input type="checkbox"/> Drawing	<input type="checkbox"/> Out of Calibration						
	<input type="checkbox"/> Turning Sequence	<input type="checkbox"/> Finish	<input type="checkbox"/> Out of Sequence						
	<input type="checkbox"/> Wave/Twist in Tube	<input type="checkbox"/> Folio	<input type="checkbox"/> Outside Dimensions						

Work Order ID 88044

\*88044\*

Page 4

July-24-12 9:03:04 AM

Item ID: D206-667-107BL

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Mid Fwd, Blue

Stop

\*NS2\*

Start Date: 7/24/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160 <b>*160*</b> QC	QC5- Inspect part completeness to step on W/O Quality Control	0.00	DAS 16 9-89	M0016					
170 <b>*170*</b> HandFXtube Hand Finishing Crosstubes	Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  1- CLEAN CROSSTUBE WITH WASH'N WIPE	0.00							<i>(14) MB 12-08-10</i>
180 <b>*180*</b> Outsource2 Outsource process - NDT	Outsource process - NDT per QSI038 4.1 Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***  Liquid Penetrant Inspection as per QSI 038Or Issue P/O: <i>17064</i> LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	0.00							<i>CX 12/08/13 (1)</i>

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS							
Part No. _____ NCR No. _____		Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>					
		Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>					
		Use-as-is <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>					
		Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>						
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											
FAULT CATEGORY											
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube				<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions				<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge  <hr/> <hr/> <hr/>		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled  <hr/> <hr/> <hr/>	

Work Order ID 88044

\*88044\*

Page 5

July-24-12 9:03:04 AM

Item ID: D206-667-107BL

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Mid Fwd, Blue

Stop

\*NS2\*

Start Date: 7/24/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start

\*NR1\*

QC:

Date:

SPC (Y/N):

Date:

Stop

\*NR2\*

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

190

\*190\*

Packaging

Packaging

0.00

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

Ensure copy of NDT results attached to work order.

IX

SO  
12-08-13

200

\*200\*

QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

DAS  
16  
8-8

12/08/13

0.00

Memo

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

203

\*203\*

HandFXtube

Hand Finishing Crosstubes

0.00

Memo

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1- PRESSURE WASH CROSSTUBE AND THEN USE WASH'N WIPE TO  
CLEAN CROSSTUBE BEFORE CHEMICAL CONVERSION

SAP  
TM

12-08-10

NCR: Yes / No

DQA: Date: ,

## **WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____			DISPOSITION			AGAINST DEPARTMENT/PROCESS					
			Rework Scrap Use-as-is Work Order Update	Skid-tube Machining Thermoforming Large Fab	Crosstube Small Fab Finishing Composite	Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier	Engineering Quality Other				
Part No. _____											
NCR No. _____											
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											
FAULT CATEGORY											
Landing Gear				General							
Bending	Bend		Grain		Ovalized	Pressure/Forced					
Centre Not Concentric to O/S	BOM/Route		Hardware		Over/Under tolerance	Temperature/Cure					
Cracks	Broken/Damaged		Inspection Incomplete		Part Incorrect	Weld					
Crushed/Crimped.	Burrs		Instructions Incomplete/Unclear		Part Lost/Missing	Wrong Stock Pulled					
Cuffs	Contamination		Maintenance		Part Moved						
Heat Treat	Countersink		Mislabeled		Positioned Wrong						
Inspection Strip in Tube	Cut Too Short		Misread		Power Loss/Surge						
Ripples in Bend	Drill Holes		Offset		Other						
Torque Waves in Extrusion	Drawing		Out of Calibration								
Turning Sequence	Finish		Out of Sequence								
Wave/Twist in Tube	Folio		Outside Dimensions								

Work Order ID 88044

\*88044\*

Page 6

July-24-12 9:03:04 AM

Item ID: D206-667-107BL

Accept

\*N900040100\*

Setup

Start

\*NS1\*

Revision ID:

Item Name: Crosstube Mid Fwd, Blue

Stop

\*NS2\*

Start Date: 7/24/12 Start Qty: 1.00

\*1\*

Cust Item ID:

Required Date: 8/24/12 Req'd Qty: 1.00

\*1\*

Customer:

Reference:

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_ Run Start \*NR1\*  
QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_ Stop \*NR2\*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
205 <b>*205*</b> QC Quality Control	QLT Memo *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE***	0.00 0.00 DAS 16 S-89 12/06/13							

210

**\*210\***

SprayPaint

SprayPaint

0.00

AF 12-8-11

Spray Painting

Memo

0.00

\*\*\* WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE\*\*\*

1-Prime inside and outside crosstube as per QSI 005 4.2

Blue

2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:  
Start Time: \_\_\_\_\_  
Finish Time: \_\_\_\_\_

Prime: 117319

PAINT:  
Start Time: \_\_\_\_\_  
Finish Time: \_\_\_\_\_

Paint: 121149

Clear: 118093

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____			DISPOSITION			AGAINST DEPARTMENT/PROCESS					
			Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>				
			Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>				
			Use-as-is <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>				
			Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											
FAULT CATEGORY											
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube				<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions							
				<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Other							
				<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled							



NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____		DISPOSITION			AGAINST DEPARTMENT/PROCESS					
Part No. _____		Rework <input type="checkbox"/>	Scrap <input type="checkbox"/>	Use-as-is <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>		
NCR No. _____		Work Order Update <input type="checkbox"/>			Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>		
					Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>		
					Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>			
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector	
Doc/Data										
Equip/Tooling										
Operator										
Material										
Setup										
Other										
Process										
Supplier										
Training										
Unapproved										
FAULT CATEGORY										
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube					<b>- General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions					
					<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Other					
					<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled					

# Picklist Print

July-24-12 9:03:03 AM

Page 1

Work Order ID: 88044

Parent Item: D206-667-107BL

Parent Item Name: Crosstube Mid Fwd, Blue

Start Date: 7/24/12

Required Date: 8/24/12

Start Qty: 1.00

Required Qty: 1.00

Comments: revA 11.01.13 New Issue EC verified by:DD  
615 DD VERF:EC

IPP REV:B 11.08.08 PER ECN 11-

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
S AN5-30A BOLT		Purchased	No		B822H	250	Each	145.0000	4	4	50	12-8-2	
				<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>				
				ST337			50						
				122416			50						
				ST339			95						
				117514			7						
				120910			8						
				121259			30				4		
				122141			50						
6 AN5-32A Bolt		Purchased	No			250	Each	319.0000	4	4	50	12-8-2	
				<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>				
				ST337			50						
				122416			50						
				ST339			169						
				119862			2						
				120423			67				4		
				122151			100						
				ST340			100						
				121541			100						
8 AN5-7A Bolt		Purchased	No			250	Each	2,556.0000	10	10	10	12-8-13	
				<u>Location</u>			<u>Loc Qty</u>		<u>Loc Code</u>				
				ST337			2556						
				119017			2556				10		

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: Date:

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS						
Part No. _____		Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>				
NCR No. _____		Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>				
		Use-as-is <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>				
		Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector	
Doc/Data										
Equip/Tooling										
Operator										
Material										
Setup										
Other										
Process										
Supplier										
Training										
Unapproved										
FAULT CATEGORY										
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube				<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions				<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge  <input type="checkbox"/> Other		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled

# Picklist Print

July-24-12 9:03:03 AM

Page 2

Work Order ID: 88044

Parent Item: D206-667-107BL

Start Date: 7/24/12

Required Date: 8/24/12

Parent Item Name: Crosstube Mid Fwd, Blue

Start Qty: 1.00

Required Qty: 1.00

AN960JD516

NAS1149D0563J

Purchased

No

250

Each

12.0000

18

18

Washer

11/25/12 SP

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
ST338	12	
2612	12	

AN970-4

Purchased

No

250

Each

193.0000

12

12

Washer

SP

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
ST344	193	
104885	4	
105442	1	
107242	2	
10771	1	
115936	10	
120644	30	
<u>121285</u>	145	

D206-667-147TRN

Crosstube Assembly, Mid Fwd

Manufactured

No

110

Each

2.0000

1

1

JW 12-8-12

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	-1	
LG003	3	
<u>82211</u>	1	
82212	1	

D2873-043

Nut Plate Assembly

Manufactured

No

230

Each

80.0000

2

2

AB 12-8-12

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG052	80	
72644	2	
<u>82949</u>	38	
84386	40	

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____		DISPOSITION		AGAINST DEPARTMENT/PROCESS						
Part No. _____		Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input type="checkbox"/>	Water Jet <input type="checkbox"/>	Engineering <input type="checkbox"/>				
NCR No. _____		Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Quality <input type="checkbox"/>				
		Use-as-is <input type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Other <input type="checkbox"/>				
		Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Supplier <input type="checkbox"/>					
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector	
Doc/Data										
Equip/Tooling										
Operator										
Material										
Setup										
Other										
Process										
Supplier										
Training										
Unapproved										
FAULT CATEGORY										
<b>Landing Gear</b> <input type="checkbox"/> Bending <input type="checkbox"/> Centre Not Concentric to O/S <input type="checkbox"/> Cracks <input type="checkbox"/> Crushed/Crimped. <input type="checkbox"/> Cuffs <input type="checkbox"/> Heat Treat <input type="checkbox"/> Inspection Strip in Tube <input type="checkbox"/> Ripples in Bend <input type="checkbox"/> Torque Waves in Extrusion <input type="checkbox"/> Turning Sequence <input type="checkbox"/> Wave/Twist in Tube				<b>General</b> <input type="checkbox"/> Bend <input type="checkbox"/> BOM/Route <input type="checkbox"/> Broken/Damaged <input type="checkbox"/> Burrs <input type="checkbox"/> Contamination <input type="checkbox"/> Countersink <input type="checkbox"/> Cut Too Short <input type="checkbox"/> Drill Holes <input type="checkbox"/> Drawing <input type="checkbox"/> Finish <input type="checkbox"/> Folio <input type="checkbox"/> Grain <input type="checkbox"/> Hardware <input type="checkbox"/> Inspection Incomplete <input type="checkbox"/> Instructions Incomplete/Unclear <input type="checkbox"/> Maintenance <input type="checkbox"/> Mislabeled <input type="checkbox"/> Misread <input type="checkbox"/> Offset <input type="checkbox"/> Out of Calibration <input type="checkbox"/> Out of Sequence <input type="checkbox"/> Outside Dimensions				<input type="checkbox"/> Ovalized <input type="checkbox"/> Over/Under tolerance <input type="checkbox"/> Part Incorrect <input type="checkbox"/> Part Lost/Missing <input type="checkbox"/> Part Moved <input type="checkbox"/> Positioned Wrong <input type="checkbox"/> Power Loss/Surge <input type="checkbox"/> Other		<input type="checkbox"/> Pressure/Forced <input type="checkbox"/> Temperature/Cure <input type="checkbox"/> Weld <input type="checkbox"/> Wrong Stock Pulled

# Picklist Print

July-24-12 9:03:03 AM

Page 3

**Work Order ID:** 88044

**Parent Item:** D206-667-107BL

**Parent Item Name:** Crosstube Mid Fwd, Blue

**Start Date:** 7/24/12

**Required Date:** 8/24/12

**Start Qty:** 1.00

**Required Qty:** 1.00

**D2873-045**

Nut Plate Assembly

Manufactured

No

230

Each

33.0000

2

2

AB 12 - 8-12

Location

LG052

(82947)

Loc Qty

33

33

Loc Code

(2)

**D2891-1**

2.25 Support

Manufactured

No

230

Each

33.0000

2

2

Ac 12. 8.12

Location

LG051

(84164)

/x

Loc Qty

20

20

LG052

72822

75176

82277

13

1

1

11

**D3595-063-395**

RUBBER CUSHION  
cut (4)0.063" X 3.95"

Manufactured

No

230

Each

38.0000

4

4

AB 12-8-12

Location

LG051

(82223)

Loc Qty

38

38

**MS20601-AD4W8**

RIVET

Purchased

No

230

Each

344.0000

14

14

AB 12-8-12

Location

311

(122452)

Loc Qty

100

100

LG051

121017

33

33

ST314

121827

122141

200

100

100

ST322

121255

11

11

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

## **WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: Date:

Work Order: _____			DISPOSITION			AGAINST DEPARTMENT/PROCESS					
			Rework <input type="checkbox"/> Scrap <input type="checkbox"/> Use-as-is <input type="checkbox"/> Work Order Update <input type="checkbox"/>	Skid-tube <input type="checkbox"/> Machining <input type="checkbox"/> Thermoforming <input type="checkbox"/> Large Fab <input type="checkbox"/>	Crosstube <input type="checkbox"/> Small Fab <input type="checkbox"/> Finishing <input type="checkbox"/> Composite <input type="checkbox"/>	Water Jet <input type="checkbox"/> Prod. Eng. Coor. <input type="checkbox"/> Rec/Store/Packaging <input type="checkbox"/> Supplier <input type="checkbox"/>	Engineering <input type="checkbox"/> Quality <input type="checkbox"/> Other <input type="checkbox"/>				
Part No. _____											
NCR No. _____											
Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector		
Doc/Data											
Equip/Tooling											
Operator											
Material											
Setup											
Other											
Process											
Supplier											
Training											
Unapproved											
FAULT CATEGORY											
Landing Gear				General							
Bending	<input type="checkbox"/>			Grain	<input type="checkbox"/>			Ovalized	<input type="checkbox"/>	Pressure/Forced	
Centre Not Concentric to O/S	<input type="checkbox"/>			Hardware	<input type="checkbox"/>			Over/Under tolerance	<input type="checkbox"/>	Temperature/Cure	
Cracks	<input type="checkbox"/>			Inspection Incomplete	<input type="checkbox"/>			Part Incorrect	<input type="checkbox"/>	Weld	
Crushed/Crimped.	<input type="checkbox"/>			Instructions Incomplete/Unclear	<input type="checkbox"/>			Part Lost/Missing	<input type="checkbox"/>	Wrong Stock Pulled	
Cuffs	<input type="checkbox"/>			Maintenance	<input type="checkbox"/>			Part Moved	<input type="checkbox"/>		
Heat Treat	<input type="checkbox"/>			Mislabeled	<input type="checkbox"/>			Positioned Wrong	<input type="checkbox"/>		
Inspection Strip in Tube	<input type="checkbox"/>			Misread	<input type="checkbox"/>			Power Loss/Surge	<input type="checkbox"/>		
Ripples in Bend	<input type="checkbox"/>			Offset	<input type="checkbox"/>				<input type="checkbox"/>	Other	
Torque Waves in Extrusion	<input type="checkbox"/>			Out of Calibration	<input type="checkbox"/>				<input type="checkbox"/>		
Turning Sequence	<input type="checkbox"/>			Out of Sequence	<input type="checkbox"/>				<input type="checkbox"/>		
Wave/Twist in Tube	<input type="checkbox"/>			Outside Dimensions	<input type="checkbox"/>				<input type="checkbox"/>		

# Picklist Print

July-24-12 9:03:04 AM

Page 4

Work Order ID: 88044

Parent Item: D206-667-107BL

Parent Item Name: Crosstube Mid Fwd, Blue

Start Date: 7/24/12

Required Date: 8/24/12

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

250

Each

2,020.0000

4

4

Nut

Location	Loc Qty	Loc Code
300	500	
121652	500	
314	1000	
122452	1000	
ST300	520	
108827	4	
116105	5	
116548	43	
<u>119109</u>	456	✓
17651	4	
2937	8	

MS21920-20

Purchased

No

230

Each

119.0000

4

4

Clamp (per MIL-DTL-8783C)

AB 12-8-12

Location	Loc Qty	Loc Code
LG050	119	
116799	8	
120676	8	
121067	2	
121274	26	
122254	75	(4)

NCR: Yes / No

DQA: \_\_\_\_\_ Date: \_\_\_\_\_

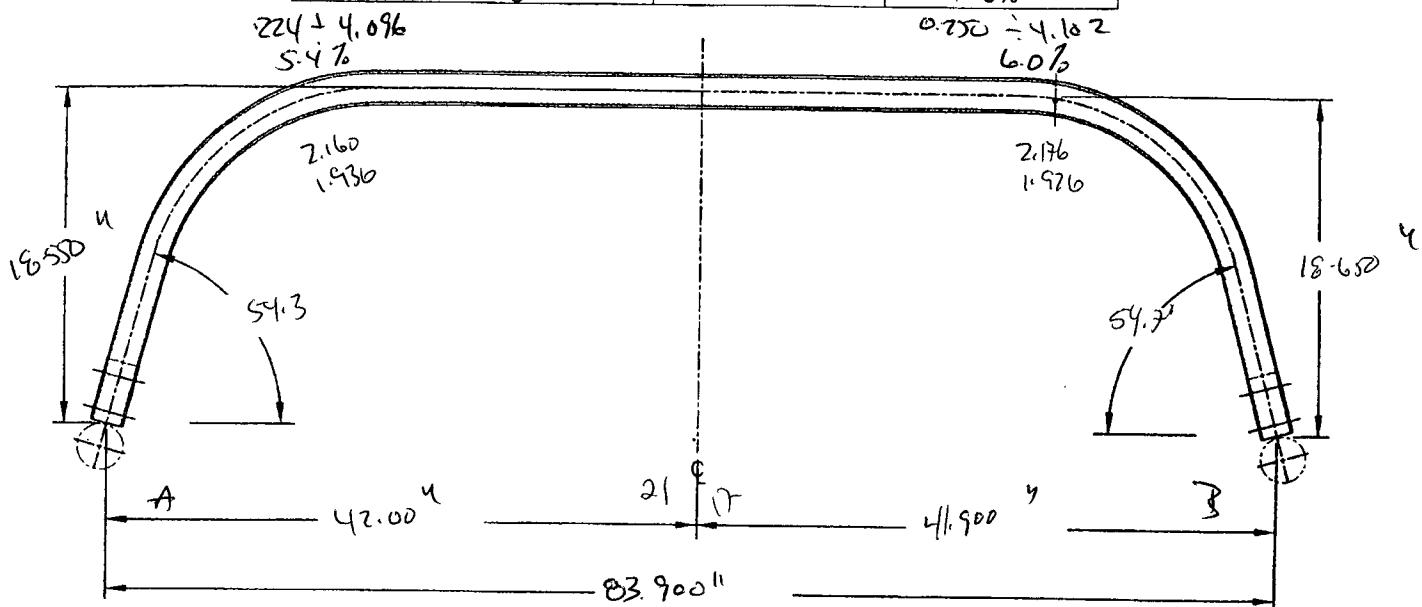
**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: \_\_\_\_\_ Date: \_\_\_\_\_

Work Order: _____			DISPOSITION		AGAINST DEPARTMENT/PROCESS					
			Rework Scrap Use-as-is Work Order Update	Skid-tube Machining Thermoforming Large Fab	Crosstube Small Fab Finishing Composite	Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier	Engineering Quality Other			
Root Cause		Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data										
Equip/Tooling										
Operator										
Material										
Setup										
Other										
Process										
Supplier										
Training										
Unapproved										
FAULT CATEGORY										
Landing Gear				General						
Bending		Bend		Grain		Ovalized		Pressure/Forced		
Centre Not Concentric to O/S		BOM/Route		Hardware		Over/Under tolerance		Temperature/Cure		
Cracks		Broken/Damaged		Inspection Incomplete		Part Incorrect		Weld		
Crushed/Crimped.		Burrs		Instructions Incomplete/Unclear		Part Lost/Missing		Wrong Stock Pulled		
Cuffs		Contamination		Maintenance		Part Moved				
Heat Treat		Countersink		Mislabeled		Positioned Wrong				
Inspection Strip in Tube		Cut Too Short		Misread		Power Loss/Surge				
Ripples in Bend		Drill Holes		Offset						
Torque Waves in Extrusion		Drawing		Out of Calibration						
Turning Sequence		Finish		Out of Sequence						
Wave/Twist in Tube		Folio		Outside Dimensions						

DART AEROSPACE LTD	Work Order:	88044
Description: Crosstube Mid Fwd (206L)	Part Number:	D206-667-107
Inspection Dwg: D206-667-147 Rev: A		Page 1 of 1

Required Dimension	Min	Max
Height	18.34	18.60
1/2 Span	41.79	42.05
Angle	54°	56°
Total Span	83.59	84.09
Bending Passes	10	--
Crushing	--	6%



	Side A	Side B
Bending Passes	21	17
Crushing	5.47%	6.0%
Comments		
* See P10 on Page #2.		

QC15 Inspection	DAS
Date	12/08/02 16

Rev	Date	Change	Revised by	Approved
A	12.02.15	New Issue	KJ	
B	12.04.16	Added bending, crushing dimensions	KJ	Q

8 . . . . . 7 . . . . . 6 . . . . . 5 . . . . . 4 . . . . . 3 . . . . .

Item	Qty -147	Part Number	Description
1	X	D206-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

**GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6002-115  
FINISHED LENGTH = 99.84±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-147" AND BATCH NUMBER ON  
INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS)
- 7) WEIGHT: 15.0 lbs (-507 = 12.84)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,  
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE  
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI  
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR-21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE  
THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS  
ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE  
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS  
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT  
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN  
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING

SHOP COPY

RETURN TO

ENGINEERING

UNCONTROLLED COPY

SUBJECT TO AMENDMENT

**WITHOUT NOTICE**

## WORK ORDER

NO 88044

NO 88041

12/07/29

**DEO ATTACHED**

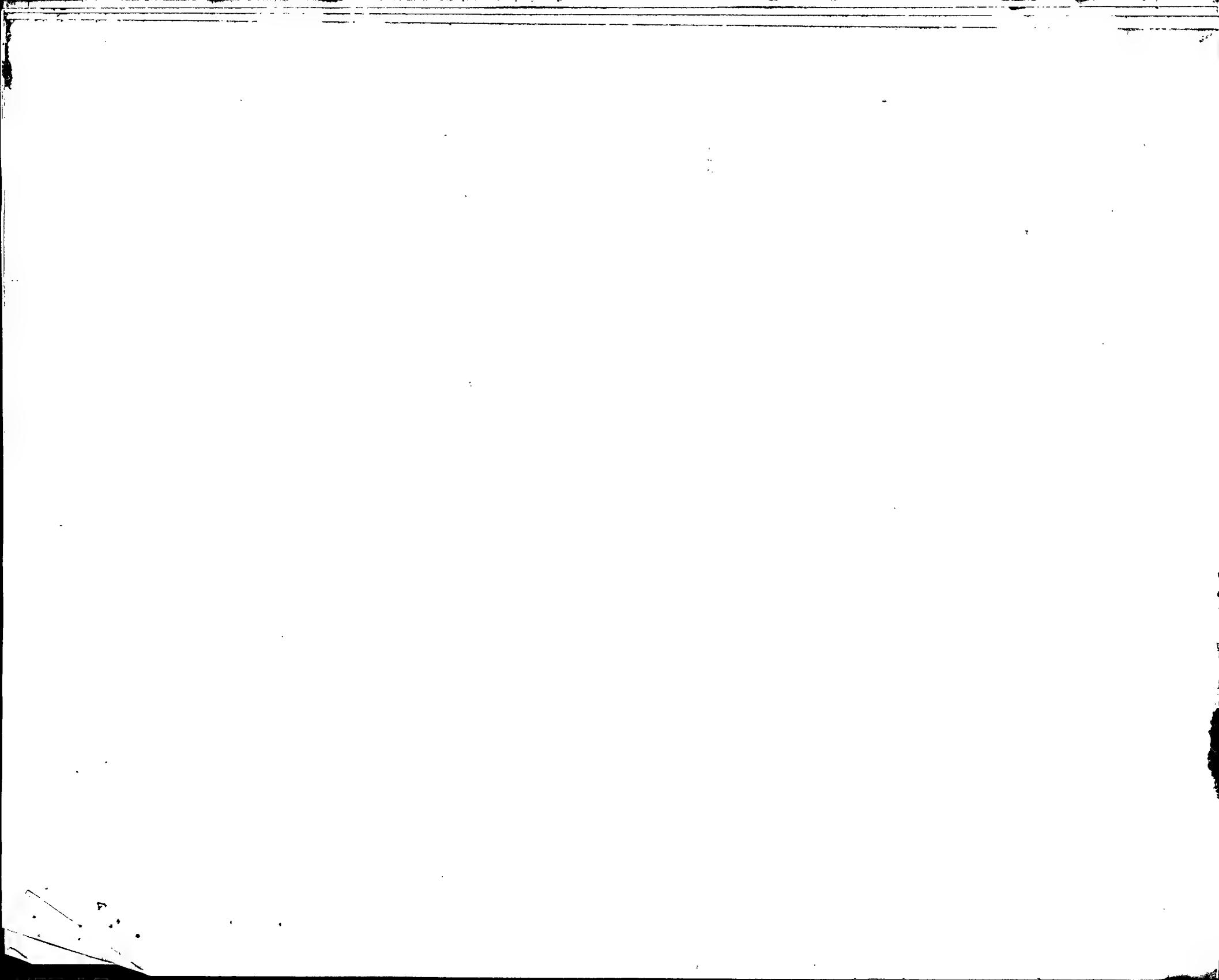
卷之三

fl-0729

UNDER REVIEW

RELEASED  
2011-05-24

A	NEW ISSUE	CP	10.11.23
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>99</i>	<b>DART AEROSPACE LTD</b>	
DRAWN	<i>99</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>2</i>	DRAWING NO.	REV. A
MFG. APPR.	<i>12</i>	0206-667-147	SHEET 1 OF 4
APPROVED	<i>✓</i>	TITLE	SCALE
DE APPR.	<i>✓</i>	CROSSTUBE ASS'Y (206L MID FWD)	NTS
DATE	10.12.23	COPRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT THE EXPRESS WRITTEN CONSENT OF DART AEROSPACE LTD.	



DRAWING NO. D206-667-147	TITLE CROSSTUBE ASS'Y (206L MID FWD)	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-147-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>q</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>JB</i>	APPROVED <i>MD</i>	DE APPR. <i>MM</i>			
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11.07.21	DATE 11.07.21	DATE 11.07.21	DATE 11.07.21	

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

88044

**CHANGE:**

IS:

Item	Qty -147	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED  
2011-07-28  
MM

# DART SERVICE INSTRUCTION

TO AMEND INSTRUCTIONS FOR CONTINUOUS AIRWORTHINESS ICA-D206-667 Rev. 3 OR LATER

REF. CANADIAN STC: SH01-5

REF. FAA STC: SR01304NY

REF. EASA STC: EASA.IM.R.S.01179

**PURPOSE:**

The supports on the following crosstubes are now installed using Proseal instead of Magnobond:

D206-667-101 @ CHG 004  
 D206-667-103 @ CHG 005  
 D206-667-107 @ CHG 002  
 D206-667-201 @ CHG 004

D206-667-203 @ CHG 004  
 D206-667-207 @ CHG 002  
 D407-667-105 @ CHG 004

12/07/2012  
 DRAFT COPY  
 ENGINEERING  
 SUPPORTED BY AMENDMENT  
 WORK NOTICE  
 NO. 8904  
 D206-667-101

**CHANGE:**

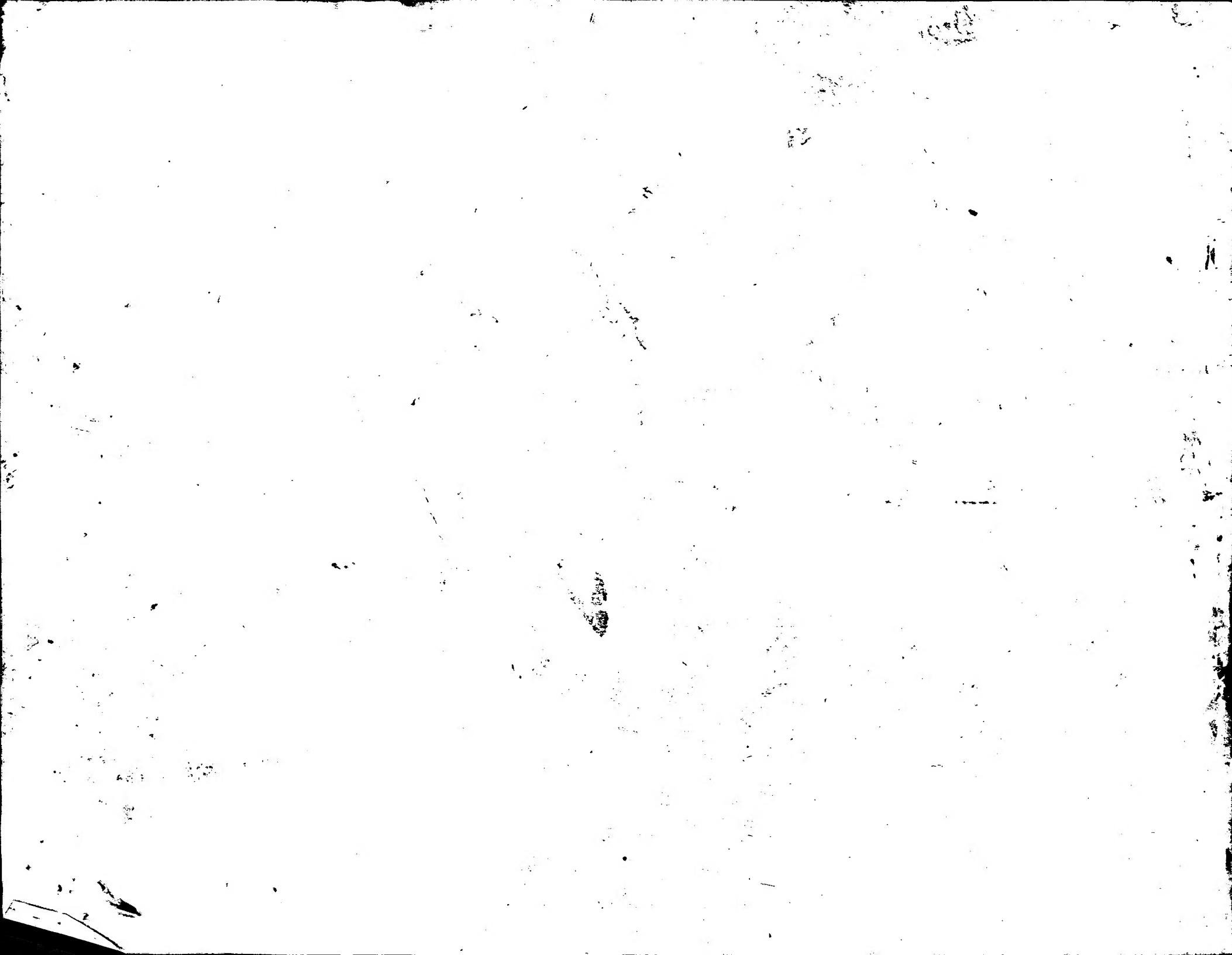
For the crosstubes listed above, section 32.4 of ICA-D206-667 is amended as follows. Use Figures 32-4 to 32-8 of ICA-D206-667 for further reference. For crosstubes of an earlier change number, it is recommended that if the supports are removed, the supports should be reinstalled using the procedure listed below.

**32.4 SUPPORT INSTALLATION**

- 32.4.1 Locate the area on crosstube for installation of support (ref. Figures 32-4 to 32-8 of ICA-D206-667). For D206-667-101/-103/-107/-201 and D407-667-105 crosstubes, the outward face of the support tabs should be 13.08" (332mm) from the crosstube center. For D206-667-203/-207 crosstubes, the outward face of the support tabs should be 10.03" (255mm) from the crosstube center. Ensure paint finish of crosstube is intact; touch up as required per Chapter 5 (5.3.9) of ICA-D206-667.
- 32.4.2 If present, remove any paint/primer on bottom of supports. Abrade mating surfaces of support and crosstube with 400-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.3 Ensure a layer of 3M Scotch-Weld 2216 B/A Epoxy Adhesive is on the bottom of the support. If required, either apply or touch-up support to have a 0.03" to 0.05" thick layer of adhesive over the entire mating surface. Allow supports to cure for 24 hours.
- 32.4.4 Abrade mating surfaces of support (after cure) and crosstube with 180-grit sandpaper. Saturate a clean cloth with MEK or 4105S Wash'n'Wipe Degreaser or equivalent and wipe until there is no residue.
- 32.4.5 Apply a 0.04" to 0.07" thick layer of Proseal 890 Class B or AMS-S-8802 Class B sealant underneath applicable support and install support.
- 32.4.6 Install the clamps opposite to crosstube support as shown in Figures 32-4 to 32-8 of ICA-D206-667. Install rubber cushions underneath each clamp around the bottom circumference of the crosstube up to the crosstube centerline. Torque clamps 80-100 in·lb (9.0-11.3 Nm). It is acceptable to use smaller or larger sized MS21920-XX clamps than those listed in ICA-D206-667, ensure that after torquing the clamps per this instruction, the nuts are in safety but not bottomed out.
- 32.4.7 Prior to installing crosstube on aircraft, allow supports to cure for 72 hours and recheck torque on clamps.

CANADA	
DEPARTMENT OF TRANSPORT	
AIRCRAFT CERTIFICATION	
BRANCH	
DAO # 01-0-01	
<b>APPROVED</b>	
BY:	
D. SHEPHERD (DE # 02)	
DATE: 11.07.20	
CERT. NO.: SH01-5	
ISSUE NO.: 3	

A	NEW ISSUE		CP	11.07.15
REV.			BY	DATE
DESIGN	97	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA		
DRAWN	97			
CHECKED	AS	DRAWING NO.		REV. A
MFG. APPR.	N/A	DSI 9565		SHEET 1 OF 1
APPROVED		TITLE		SCALE
DE APPR.		SUPPORT INSTALLATION CHANGE		NTS
DATE	11.07.15		COPYRIGHT © 2011 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



## LIQUID PENETRANT TEST REPORT

P- 12150

CLIENT	DAT AEROSPACE	DATE	August 10/12	PAGE	1 OF 1
ATTENTION	LINDA / MAT.	TIME	100-12-C0309.	AM	<input checked="" type="checkbox"/>
ADDRESS	1270 ABERDEEN ST. HAWKESBURY, ON.	PO/WO NO.		PM	<input type="checkbox"/>
PROJECT		WORK LOCATION	CANE-		
ITEM(S) EXAMINED		ACCEPTANCE STD.	ASTM E1417 DS-038	REV./DATE	2005
			(6)	(2)	

JOB DESCRIPTION	PROCEDURE NO. LT-002	REV./DATE	2008	TECHNIQUE NO. LT-002	REV./DATE	2008
PART NO.	SEE RESULTS					MATERIAL: ALUMINUM / STAINLESS STEEL THICKNESS: VARIOUS
SCOPE	A WET FLUORESCENT LIQUID PENETRANT EXAMINATION WAS CONDUCTED ON THE SURFACE ONLY 100%					
TEST DETAILS						
METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED	
FAMILY BRAND	MAGNA Flux		BLACK LIGHT S/N 16459	<input type="checkbox"/> OUTPUT > 1000 $\mu$ W/cm <sup>2</sup>	<input type="checkbox"/> AMBIENT < 2 fc	
PENETRANT	2L67	MINIMUM DWELL TIME 45 <sup>10</sup> MIN.	LIGHTING EQUIP.	<input type="checkbox"/> FLASHLIGHT	<input type="checkbox"/> TROUBLELIGHT	
PENETRANT REMOVER	H2O	MINIMUM DRY TIME >10 MIN.	OTHER	<input type="checkbox"/> OUTPUT > 100 fc @ SURFACE		
DEVELOPER	TKD 52	MINIMUM DWELL TIME 10 MIN.	LIGHT METER S/N 1098866	CAL DUE DATE Aug 13/12		
DEVELOPER TYPE	<input type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY			

TEST SURFACE						
SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input checked="" type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL	
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/20°F		<input type="checkbox"/> -4°C/20°F TO 10°C/50°F		<input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F	<input type="checkbox"/> > 52°C/125°F

RESULTS- <input type="checkbox"/> METRIC <input checked="" type="checkbox"/> IMPERIAL						
ITEM	COMMENTS	ACCEPT	REJECT			
2. - STUDS - W.O. # 86310		/		<p>2/08/13</p> <p>REL RWD AND AREA FOR INDICATIONS</p>		
1 - CLOSTUBES - W.O. # 88044		/				
1 - " " " # 80048		/				
1 - " " " # 88045		/				
1 - " " " # 84779		/				
1 - " " " # 85562		/				
1 - " " " # 87295		/				

## Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

## Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE	JESSE White	PRINT	SIGNATURE	DTR #	E 91565
TECHNICIAN (SIGNATURE):				REPORT	
NAME (PRINT):				REVIEWED BY:	
1 <sup>ST</sup> TECHNICIAN				NAME:	INITIALS
CGSB LEVEL	II	SNT LEVEL		2 <sup>ND</sup> TECHNICIAN	
CGSB REG. NO	6006			CGSB LEVEL	SNT LEVEL
CGSB REG. NO				CGSB REG. NO	

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY